

Amendments to the Claims

Please note that "strikeout" matter is shown with larger-than-normal italic letters containing the strikeout horizontal marks such as in this example: *~~STRIKEOUT~~*.

1. (Currently amended) A multiple electrode pair array apparatus for use with a separate multiple well plate having multiple nonconductive wells distributed in a two-dimensional matrix array having R rows and C columns, comprising:

a non-conductive base member,

an array of pairs of electrodes attached to said base member and projecting therefrom, wherein said pairs of electrodes *~~electodes~~* are distributed on said base member in a two-dimensional matrix array having R rows and C columns to enable registration with the separate two-dimensional matrix array of nonconductive wells, wherein each pair of electrodes includes a respective first electrode and a respective second electrode,

an array of R row conductors attached to said non-conductive base member, wherein each row conductor is electrically connected to corresponding first electrodes in a corresponding row of first electrodes, and

an array of C column conductors attached to said non-conductive base member, wherein said C column conductors are perpendicular to said R row conductors, wherein each column conductor is electrically insulated from said row conductors,

wherein each column conductor is electrically connected to corresponding second electrodes in a corresponding column of second electrodes.

2. (Original) The apparatus of claim 1 wherein:
said first electrodes and said second electrodes are parallel to each other,
said first electrodes and said R row conductors are parallel to each other, and
said second electrodes and said C column conductors are perpendicular to each other.

3. (Original) The apparatus of claim 1 wherein:
said non-conductive base member has a top portion and a bottom portion,
said row conductors and said column conductors are positioned away from the top portion of the said non-conductive base member.

4. (Currently amended) *The - apparatus - of claim - 1 -*
A multiple electrode pair array apparatus for use with a separate multiple well plate having multiple nonconductive wells distributed in a two-dimensional matrix array having R rows and C columns, comprising:

a non-conductive base member,

an array of pairs of electrodes attached to said base member and projecting therefrom, wherein said pairs of electrodes are distributed on said base member in a two-dimensional matrix array having R rows and C columns to enable registration with the separate two-dimensional matrix array of nonconductive wells, wherein each pair of electrodes includes a respective first electrode and a respective second electrode,

an array of R row conductors attached to said non-conductive base member, wherein each row conductor is electrically connected to corresponding first electrodes in a corresponding row of first electrodes, and

an array of C column conductors attached to said non-conductive base member, wherein said C column conductors are perpendicular to said R row conductors, wherein each column conductor is electrically insulated from said row conductors, wherein each column conductor is electrically connected to corresponding second electrodes in a corresponding column of second electrodes,

wherein an adjacent electrode pair spacing gap is provided between a first electrode on one pair of electrodes and second electrode on an adjacent pair of electrodes, such that an inside wall of the multiple well plate is received in said adjacent electrode pair spacing gap.

5. (Original) The apparatus of claim 1, further including:
a set of row electrical connection members electrically
connected to said row conductors, and
a set of column electrical connection members electrically
connected to said column conductors.

6. (Currently amended)

~~The apparatus of claim 1~~

A multiple electrode pair array apparatus for use with a separate
multiple well plate having multiple nonconductive wells
distributed in a two-dimensional matrix array having R rows and C
columns, comprising:

a non-conductive base member,

an array of pairs of electrodes attached to said base member
and projecting therefrom, wherein said pairs of electrodes are
distributed on said base member in a two-dimensional matrix array
having R rows and C columns to enable registration with the
separate two-dimensional matrix array of nonconductive wells,
wherein each pair of electrodes includes a respective first
electrode and a respective second electrode,

an array of R row conductors attached to said non-conductive
base member, wherein each row conductor is electrically connected
to corresponding first electrodes in a corresponding row of first
electrodes, and

an array of C column conductors attached to said non-
conductive base member, wherein said C column conductors are
perpendicular to said R row conductors, wherein each column
conductor is electrically insulated from said row conductors,
wherein each column conductor is electrically connected to
corresponding second electrodes in a corresponding column of
second electrodes,

wherein said base member includes a plurality of access channels
which are in registration with the wells of the multiple well
plate.

7. (Original) The apparatus of claim 6 wherein said access
channels are circular in shape.